

SYSTEM AND METHOD FOR PLASMA PLATING

ABSTRACT OF THE DISCLOSURE

An exemplary system and method for plasma plating are provided to generate a deposition layer on a substrate. The method for plasma plating includes positioning a substrate within a vacuum chamber, positioning a depositant in a filament within the vacuum chamber, reducing the pressure in the vacuum chamber to a level at or below 4 milliTorr, and introducing a gas into the vacuum chamber at a rate to raise the pressure in the vacuum chamber to a level at or between 0.1 milliTorr and 4 milliTorr. In other embodiments, the gas is not required to be introduced. The method also includes applying a dc signal to the substrate at a voltage amplitude at or between 1 volt and 5000 volts, applying a radio frequency signal to the substrate at a power level at or between 1 watt and 50 watts, and heating the depositant to a temperature at or above the melting point of the depositant to generate a plasma in the vacuum chamber. The plasma will preferably include both positively charged gas and depositant ions that will be attracted to the substrate, which will be provided at a negative potential if the dc signal is provided at a negative polarity.